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10/821,038	04/07/2004	Shaolin Li	27592-00275-US5	9250
30678 7590 10/29/2008 CONNOLLY BOVE LODGE & HUTZ LLP 1875 EYE STREET, N.W. SUITE 1100 WASHINGTON, DC 20006				
EXAMINER				
PHAN, TRI H				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/821,038

Applicant(s)

LI, SHAOLIN

Examiner

TRI H. PHAN

Art Unit

2416

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 and 27-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-25 and 27-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Communication(s)

1. This office action is in response to the communication(s) filed on January 15th, 2008 and July 28th, 2008. Claims 26 and 32 are canceled. Claims 1-25 and 27-31 are now pending in the application.

Terminal Disclaimer

2. The terminal disclaimers filed on July 28th, 2008 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of Application Number 10/821,143, and of Application Number 10/820,961, have been reviewed and are accepted. The terminal disclaimers have been recorded.

Claim Objections

3. Claims 4 and 15-16 are objected to because of the following informalities:

In regard to claims 4, 15 and 16, the limitation "802.11x" should be changed to -- 802.11 -- to avoid indefinite.

Appropriate corrections are required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-25 and 27-31 are rejected under 35 U.S.C. 102(e) as being anticipated by **Sugar et al.** (U.S.2003/0203743; hereinafter refer as ‘**Sugar**’).

- In regard to claims 1, 4, 6, 21 and 27, **Sugar** discloses *an apparatus and method of operating a radio frequency ‘RF’ signal processing circuit* (‘RF transceiver’; for example see fig. 1), *which comprise*

establishing a wireless communications channel between a first access point and a second access point in accordance with a communications protocol (‘802.11x’; for example see figs. 6-7, 9-10; page 72, para 66; wherein radio transmitter and receiver perform communications channel between devices, e.g. “*first/second access points*”, as disclosed in page 7, para 70);

monitoring transmission conditions in said wireless communications channel, including an available data rate, to determine whether a first transmission mode or a second transmission mode should be used (for example see pages 2-3, para 33; page 3, para 37-38; wherein operating modes, e.g. transmitting mode or receiving mode or “*first/second transmission modes*”, depend on transmission conditions of the radio transceiver circuits as disclosed in page 5, paras 48-52; and under control of the switch control signal as specified in page 4, para 46, lines 28-31);

performing a first set of signal processing operations at said first access point on a single received RF signal from said second access point when said first transmission mode is used (for

example see pages 2-3, para 32-33; where a signal in a single RF channel, e.g. “a single received RF signal”, is received and processed for transmitting or receiving, e.g. “first set of signal processing operations”);

performing a second set of signal processing operations at said first access point on M independent RF received signals (fig. 9; where M independent signals are received from 602-608) from said second access point when said second mode of operation is used (for example see pages 2-3, para 33; pages 3-4, paras 35-41; wherein different signals from different frequencies bands are received and processed for transmitting or receiving, e.g. “second set of signal processing operations”, through MIMO radio transceiver; and wherein operation of ‘transmitting process’ is different with operation of ‘receiving process’, e.g. “including at least one operation not included in said first set of signal processing operations”);

wherein data transmissions between said first access point and said second access point are compliant with said communications protocol in both said first transmission mode and said second transmission mode (‘802.11x’; for example see page 72, para 66).

- Regarding claim 2-3, 22-23 and 28-29, **Sugar** further discloses, *wherein said second mode is automatically enabled when transmission conditions indicate that a data rate in said channel is to be enhanced above a nominal operating rate or has fallen below a predetermined threshold (‘cut-off frequency’; for example see page 2, para 31; page 2-3, para 33; page 4, para 46; wherein cut-off frequencies are depended on selected data rate, operation mode and frequency band of the radio transceiver operation).*

- In regard to claim 5 and 19, **Sugar** further discloses, *wherein said second set of signal processing operations introduce a latency, and said latency is compensated using a dummy data response to maintain compatibility with said communications protocol* (for example see page 3, para 39; page 4, para 41; wherein the sample and hold circuit compensates the delay in different operation modes).

- In regard to claims 7, 15, 24 and 30, **Sugar** discloses *an apparatus and method of performing multi-antenna radio frequency 'RF' communications* ('MIMO transceiver'; for example see fig. 1), *which comprises*

performing data transmissions during a first operating mode in a channel at a first access point using a first baseband processor (for example see pages 2-3, para 32-33; wherein transmission signal in the RF channel is received and processed for transmitting or receiving mode, e.g. "first operating mode", through separate baseband section of the chip, e.g. "first baseband processor", of communication devices, e.g. "first/second access node", as disclosed in page 7, para 70; and where "802.11 protocol" is used for transmission as disclosed in page 7, para 66):

performing data transmissions during a second operating mode in said channel at said first access point using a multi-antenna signal processing circuit that is not used in said first operating mode (for example see pages 2-3, para 33; pages 3-4, paras 35-41; wherein different signals from different frequencies bands are received and processed for transmitting or receiving, e.g. "second operating mode", through MIMO radio transceiver as disclosed in figs. 1-4; different baseband sections of interface 600 in fig. 9, e.g. "multi-antenna signal processing

circuit”; and wherein process of ‘transmitting circuit’ is different with process of ‘receiving circuit’, e.g. “*not used in said first operating mode*”), including the following steps

receiving M independent RF modulated input signals from a second access point (for example see fig. 9; where M independent signals are received from 602, 604, 606 and 608 of the communication device);

processing said M independent RF modulated input signals using a channel mixing matrix to extract N independent data signals transmitted by said second access point (for example see fig. 2, paras 39-41, wherein RF mixers down convert the incoming signals into appropriate I/Q baseband signals);

wherein said first operating mode and said second operating mode are automatically selected based on a transmission condition in said channel (for example see para 48-52; wherein operation mode automatic based on transmission conditions of the radio transceiver circuits, e.g. whether in receiving mode or transmitting mode).

- In regard to claim 8, **Sugar** further discloses, *wherein said multi-antenna signal processing circuit processes at least 4 separate input signals (for example see fig. 9).*

- Regarding claim 9 and 20, **Sugar** discloses baseband transceiver operation, while no specific use for Herault-Jutten network (claim 20) or explicit equation is provided (claim 9); however one skilled in the art will appreciate that basic signal processing can be equated to desired outcome values as necessary, and therefore the equation provided by applicant is one version but many other versions based on appropriate need can be arrived at as desired by a user.

- In regard to claims 10, 16-18, 25 and 31, Examiner takes official notice that application of baseband transceivers in processing multiple signals can be readily applied to various access technologies such as TDMA, CDMA, AMPS and SDMA (see US 2003/0190927 A1).

- Regarding claim 11, **Sugar** further discloses, *wherein said multi-antenna signal processing circuit extends a data transmission range achieved by said baseband processor circuit between said first access point and said second access point* (for example see page 5, para 48).

- In regard to claim 12, **Sugar** further discloses, *wherein said multi-antenna signal processing circuit increases a data transmission rate achieved by said baseband processor circuit between said first access point and said second access point* (for example see pages 2-3, para 33).

- Regarding claim 13, **Sugar** further discloses, *wherein said multi-antenna signal processing circuit transmits M separate data signals to said second access point* (for example see figs. 1-4, 9).

- In regard to claim 14, wherein a localized encryption is to be achieved for said second access point by independently controlling said M separate transmission signals (Examiner takes

official notice the use of encryption is well known in the arts see US 2003/0190927 A1, and can easily be incorporated for security and protection).

Response to Amendment/Arguments

6. Applicant's arguments filed on January 15th, 2008, with respect to claims 1-25 and 27-31, have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tri H. Phan, whose telephone number is (571) 272-3074. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham can be reached on (571) 272-3179.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, whose telephone number is (571) 272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tri H. Phan/

Primary Examiner, Art Unit 2416

October 29, 2008